

ABSTRACT OF THE DISCLOSURE

A reticle inspection system and method for complete and fast inspection of phase shift mask reticles, both for incoming inspection and for periodic and pre-exposure inspection tool, is employable by facilities such as mask shops as an inspection tool compatible to the mask shop's customers. The inventive system and method detect phase errors in an aerial image by acquiring the image of the phase shift mask under the same optical conditions as the exposure conditions (i.e. wavelength, numerical aperture, sigma, and illumination aperture type). Images are acquired at a positive out-of-focus and a negative out-of-focus, and are compared in order to enhance possible phase error. The term "phase error" refers to the acceptable range of the phase deviation from the programmed 180° on the phase shift mask, by using the exposure system to achieve the image on the photoresist, satisfying the requirements of the wafer specification.